R E P O R T R E S U M E S

ED 018 857 EA 001 233

THE CENTER FOR COORDINATED EDUCATION AND EDUCATIONAL CHANGE.

BY- RUBIN, LOUIS J.

PUB DATE FEB 68

EDRS PRICE MF-$0.25 HC-$0.80 18P.

DESCRIPTORS- *EDUCATIONAL COORDINATION, *EDUCATIONAL CHANGE, *EDUCATIONAL IMPROVEMENT, *EFFECTIVE TEACHING, TEACHERS, PRINCIPALS, SCHOOL ORGANIZATION, EDUCATIONAL INNOVATION, INSTRUCTIONAL PROGRAMS, INSERVICE EDUCATION, *EDUCATIONAL RESEARCH, CHICAGO,

THE CENTER FOR COORDINATED EDUCATION SEEKS, THROUGH PRACTICAL EXPERIMENTS IN SCHOOLS, TO LEARN MORE OF NEEDED IMPROVEMENTS AND THE PROCESSES FOR THEIR REALIZATION. DURING THE 1967-1968 PERIOD, THE CENTER IS SPONSORING THREE SERIES OF PROJECTS. (1) TESTING OF A NEW APPROACH TO THE PROFESSIONAL GROWTH OF PRINCIPALS AND TEACHERS WILL INVOLVE 10 SCHOOLS AND THEIR TOTAL INSTRUCTIONAL STAFFS, WILL UTILIZE THE PRINCIPAL AS INSTRUCTIONAL LEADER, AND WILL INTEGRATE MAJOR COMPONENTS OF CLASSROOM INSTRUCTION. THESE TRAINING PROGRAMS WILL ATTEMPT TO ACHIEVE GREATER CONSISTENCY IN THE SCHOOLS' INSTRUCTIONAL PROGRAMS BY REDUCING CONFLICTING TEACHING GOALS AND BY INCREASING CONGRUENCE OF TEACHING OBJECTIVES AND METHODS. (2) PROJECTS ON THE DIAGNOSIS OF SCHOOL WEAKNESSES WILL REQUIRE THE CORPORATE SCHOOL STAFF TO COMPARE ACTUAL STUDENT ACHIEVEMENT OF LEARNING OBJECTIVES WITH ANTICIPATED ACHIEVEMENT. THE DIAGNOSTIC PROCEDURE WILL CONSIST OF CLARIFICATION AND APPRAISAL OF PURPOSE, EVALUATION OF INSTRUCTION IN TERMS OF STATED OBJECTIVES, DIAGNOSIS OF FACTORS ACCOUNTING FOR DIFFERENCES BETWEEN ANTICIPATED AND ACTUAL TEACHING OUTCOMES, AND PLANNING IMPROVEMENTS. (3) ELEVEN PROJECTS ON THE UTILIZATION OF INNOVATIONS ARE DESIGNED TO INCREASE KNOWLEDGE ABOUT THE RATIONAL USE OF INNOVATIONS. PREPARATION FOR INSTALLATION OF AN INNOVATION WILL INCLUDE SPECIFICATION OF EXPECTED BENEFITS, INNOVATION APPROPRIATENESS, STAFF RETRAINING, REQUIRED MATERIALS, AND EFFECTS. THIS PAPER WAS PREPARED FOR DELIVERY TO THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION (CHICAGO, ILLINOIS, FEBRUARY 8-10, 1968). (HM)

ED018857

THE CENTER FOR COORDINATED EDUCATION AND EDUCATIONAL CHANGE

Louis J. Rubin

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Prepared for
AERA – Chicago
February 1968

EA 001 233

Louis J. Rubin

INTRODUCTION

The Center for Coordinated Education is interested in school improvement. Supported by a grant from the Ford Foundation, it seeks to learn – through practical experiments in schools – more about improvements that are needed and the processes through which they can be achieved. The Center's method is perhaps best characterized by paraphrasing the Danish educator Gruntvig: the only thing that can save education is the spectacle of its own condition.

the complexity of school improvement

To improve a thing is to make it better. Schools are complex institutions, however, and their improvement rests upon four elements: knowing the way things are, knowing what would be better, knowing how to make them better, and wanting to make them better. Dealing with these elements is anything but simple. The schools are the province of the people and, like any social institution, are responsive to many political, social, and economic forces.

three aspects of improvement

School betterment can involve everything from cafeteria maintenance to football teams. The Center is interested chiefly in the improvement process as it bears upon the instructional program (what is taught and how it is taught), the professional growth of personnel (procedures and events which make teachers and principals more effective), and the organization of the school (conditions within the school that help the teacher to teach and the child to learn).

It has been almost a decade since the movement to reform public education, with its accompanying demand for change and innovation, reached perceptible proportions. Much has occurred in the intervening period. There has been a fundamental analysis of the ways in which teaching and learning are shaped by human ambition and by the technologies available to man. Fine minds have brought their sharpest talents to bear upon the problems of

A final example of the organizational problem deals with several disciplines within the field of education itself. Considerable confusion exists over the relations between the several spheres of activity within a school system. While this confusion is an honest reflection of the enormous complexity of the interactions among these spheres, it is nevertheless damaging to the process of sorting out variables and systems of variables for study and analysis, which alone in turn can produce some systematic insight into the interactions. Thus while in practice, for example, administration of a school system cannot occur by itself without continuous interaction with a socio-political system on the one hand and a teaching system on the other hand, for the purposes of study it is necessary to establish systematic boundaries to "administration," "school politics," and "teaching."

While numerous attempts have been made to delimit "curriculum," most of these efforts have not proven heuristic to the study of school phenomena because the approach taken has been semantic and definitional. A major exception to this is Macdonald's application of the principles of systems analysis to the "action spheres" of school phenomena.[5] Macdonald's identification of the system-properties, boundaries, and spheres of interaction is a substantial contribution to the founding of an organizational structure for curriculum theory.

Substantive Structures

Substantive structures are sets of assumptions about the variables of interest to a discipline which control the questions asked and inquiries undertaken. There are many levels of substantive structure apparent in most disciplines. Some of them are so basic to a discipline's postulational structure that their removal or alteration would require a total revision of that structure. An instance would be the drastic alterations in geometry that result from altering assumptions about the properties of a plane.

At the other extreme are substantive structures of a highly transient nature. These are trial assumptions of all sorts including the hypotheses that guide particular experiments and "working assumptions" employed frequently in narrative attempts at tentative explanation. Between the two extremes of the basic foundational structures of a discipline and tentative devices used in trial explanations lie the bulk of substantive structures - those that are of central concern here. These are sets of assumptions which have withstood to some extent the test of time and experiment and have achieved a degree of stability within a discipline. Typically these structures are modified in minor ways from time to time but remain intact in basic character. The set of assumptions implicit in the basic S-R equation is such a substantive structure. Clearly the S-R idea has undergone modification over the years, but remains in essence the basic notion that shapes the questions asked by experimental psychologists. Thus, for example, the S-R structure does not generate inquiry into the nature of unconscious experience. Conversely, the substantive structures of depth-psychology do not generate inquiry into extinction rates under varying schedules.

Under certain conditions substantive structures themselves become the focus of inquiry within a discipline. This happens when the explanatory power of these structures cease to be sufficient to account for new data in the discipline. Thus R. W. White's classic work on the "competence motive" is a response to data gathered through inquiry generated by the substantive structures of motivational psychology which can no longer be explained in terms of those structures. White finds that a new set of assumptions is needed which in part displaces and in part augments the earlier sets of assumptions.

The substantive structures employed in most curriculum work for the past 30 years have remained relatively stable. They are most clearly apparent in the well-known work of Ralph Tyler, especially in the four-step formula of stating objectives, selecting experiences, ordering the selection, and evaluating the results in terms of these objectives.[6] While the assumptions embodied in the "Tyler rationale," as it is commonly known, have contributed a certain amount of orderliness to curriculum practice, they have not been especially fruitful in generating new areas of inquiry. In addition, there are a number of phenomena traditionally of concern to the planners of formal educational experience which this substantive structure does not seem capable of comprehending. Thus there are presently a number of efforts to develop alternative or complimentary substantive structures for curriculum theory. Eisner's excellent analysis of the uses of "objectives" is a step in this direction in that it calls attention to some of the limitations of the Tyler rationale.[7] A recent paper of mine is a fair effort to examine and suggest an alternative to one aspect of the current substantive structure.[8] The general tenor of several recent ASCD publications suggests an effort to develop new substantive structures. This is true especially in New Insights and the Curriculum[9] and Language and Meaning.[10] In the latter publication Dwayne Huebner's article entitled "Curricular Language and Classroom Meaning" is one of the most promising efforts to propose new substantive structures. Huebner proposes five different modes of regarding curriculum phenomena. While Huebner's paper is more suggestive than complete, it seems likely that the five modes could be developed into five distinct complimentary substantive structures each with its own set of assumptions and each generating unique bodies of inquiry. The first mode, the "technological," is essentially a rationalization of the assumptions implicit in the Tyler approach. The second mode is called "political" and has as its key concepts"influence" and "power." It is no secret that influence and power play as important a role in the curriculum process as do educational objectives. The political mode of regarding curriculum phenomena would generate inquiry into this role.

The third mode, which Huebner calls "scientific," regards curriculum phenomena with respect to the way in which they generate new knowledge about the educational process. The fourth and fifth modes, the ethical and aesthetic, are at once the most intriguing and the most complex. I shall not discuss them here beyond saying that with careful work these modes could be developed into extremely productive substantive structures.

There are other worthy efforts to reconceptualize the basic assumptions with which one approaches curriculum. One would include here some of the voluminous work in which efforts are made to examine curriculum from the point of view of Dewey's philosophy of education, as well as a great deal of

work in which points of view developed in other philosophies of education and other disciplines altogether are brought to bear upon education. However, much of this work is embedded in the structures of its present disciplines and is not articulated specifically with the intent of elucidating curriculum phenomena. As observed above in the discussion of organizational structures, the problem of "translation" of insights from one discipline to another is not as simple as it appears to be. A very ripe area awaits here for systematic work. One would assume that some such understanding went into the planning of such publications as ASCD's New Insights and the Curriculum.

The development of innovative substantive structures in curriculum is particularly desirable when viewed in the context of the past 20 years. In this period the Tyler approach, or Technological Rationale, has been the dominant substantive structure in the field of curriculum. There is a very fortunate correspondence between this structure and the extensive technical apparatus that constitutes the dominant method of inquiry in the same period. This correspondence has facilitated the generation of an extensive body of knowledge about those aspects of education that are readily comprehended in terms of the Technological Rationale. While one cannot but applaud this, one is also obliged to see an associated danger; namely, that we grow accustomed to thinking of that aspect of education we are beginning to understand as constituting the essence or even the whole of education, and fail therefore to pursue other areas in which our knowledge is embarrassingly scant. Put succinctly, we are on our way to thinking that sheer transmission of information and technique is the important part of education if not the whole of it. Since we are doing quite well at devising methods to accomplish this part, we tend to neglect the stickier, more frustrating, and less profitable sort of inquiry that might clarify for us such problems as the moral content of the transactions among fellow human beings in the classroom; the functioning of student's interests and aims (as these are defined by Dewey) in the classroom under various conditions; the various conceptions of the nature, function, source, and uses of knowledge that are implicitly conveyed to students through contrasting methods of transmitting knowledge; or the attitudes and feelings towards experience to which students are incidentally habituated during the course of the increasingly efficient instructional day.

Among the many reasons for this tendency (the "sputnick syndrome") there are two that curriculum theorists might do something about. One is to develop alternative substantive structures, as Huebner and others have done. The second, without which the leads given by Huebner and others will not be followed, is to solve the problem of warranting assertions of a non-technological sort. We have the apparatus for warranting technological assertions down pat. Given the enormous responsibilities educators feel, it is unlikely that they will venture too far with assumptions leading to assertions for which there exists no clear method of establishing warrantability. The problem of establishing warrantability for assertions brings us to the third of Schwab's structures, those he calls syntactical structures.

Syntactical Structures

Every discipline has some more or less stable system for gathering and evaluating data, posing and testing hypothetical assertions, and relating these assertions to broader generalizations and explanatory schemes. Such

a system constitutes the syntactical structure of the discipline. These structures exhibit some very basic characteristics which are highly stable, such as goodness of fit between generalization and data, conformity of the inferential process to the general rules of logic, and the requirement to reduce internal contradictions by refinement of measurement or generalization or both. However within this broad framework of stable structures, each discipline exhibits more specific syntactical structures which may be more or less stable at a given time in the growth of the discipline. The variability of these structures is related to a large number of factors in a complex way which for the purposes of this paper need only be touched upon here.

One of the factors is the nature of the variables being investigated at a given time as in a given group of studies. Thus, for example, a psychologist studying the effect of certain environmental conditions upon the manner in which unconscious symbol-systems manifest themselves in conscious behavior uses a syntax differing markedly from that employed by a psychologist studying extinction rates under varying reward schedules. In the first case, the dependent variable is complex and not readily quantified or even observed. Variations in the behavior in question need to be established seperately for each subject on the basis of extended observation and lengthy analysis. The analysis itself is guided by an elaborate system of inference. And, since the independent variables must be maintained in operation over long periods and replicated numerous times for each subject as well as across subjects, the proble of control is enormous. Given these considerations, it is appropria that the syntactical structures in this sort of inquiry focus upon inferential procedures, elaborate descriptive apparatus, and criteria for validity of individual cases. This stands in sharp contrast to the syntax of the second case, which emphasizes through a probability model the reliability of an inferred relationship between dependent and independent variables across large numbers of subjects. It is true that there are many basic similarities between the two cases. The experimental psychologist needs to pay careful attention to the validity of his measurement of dependent variables just as surely as the depth psychologist ultimately has to confront the problem of the reliability of his inferences over large numbers. But given the present status of these two branches of psychology, it is clear that the syntactical structure most in need of focal attention differ and are specific to the kinds of problems under investigation. Further, I think it might fairly be said that the syntax of inquiry in experimental psychology is relatively stable at this point--most of its general features have been worked out in a way that seems adequate for handling the problems currently of interest. For depth psychology, by contrast, the syntax of inquiry is highly problematic and in a state of flux.

These two cases are special in that they represent two fields within a discipline or, as some would prefer to state it, two closely related disciplines. This observation points the way to two further comments about syntax. First, that syntactical structures are closely related to substantive structures. It may be argued that behavioral and psychiatric efforts to explain phenomena differ not in realm of convenience of phenomena of concern so much as in the substantive structures--the guiding heuristic conceptions--with which the phenomena are approached. In a later section of this paper the interdependence of substantive and syntactical structures will be discussed further.

The second comment is that in contrast to the difference in emphasis cited above there may be much more basic differences in syntactical structure between more strikingly different fields or disciplines. Thus the syntax of proof in mathematics differs in some quite essential ways from the syntax of proof in history.

In the field of curriculum theory the syntactical problem is particularly acute. There are a number of reasons for this, but two stand out as especially worth mentioning:

1) The confusion between descriptive theory and "prescriptive theory." The syntax required to validate descriptive propositions is radically different from the syntax required to validate imperatives, "ought's," or prescriptive propositions. Yet the curriculum literature is noteworthy for an insidious and subtle blending of is's and ought's which make it difficult to come to grips with the problem of validation.

2) There is very little agreement as to the variables to be considered. Except for the area of "instruction"--that small part of the education process for which a "learning" paradigm is to some degree appropriate, curriculum scholars find it extraordinarily difficult to delimit the variables of concern. As was shown above, the nature of the variables in question is a determinant of the syntax to be employed. So long as each scholar bounds his variables uniquely he must also choose, somewhat ad hoc, his own syntax. The stability of syntax resulting from interaction among scholars cannot come about until there is some degree of agreement about variables. Several efforts to delimit curriculum variables, both in terms of identifying sets within the field and boundaries of the field with other fields, have been made. In addition to work on boundaries cited in the section on "organizational structures" above, some important contributions have been made by Frymier,[11] Faix,[12] Johnson,[13] Komisar and Mclellen[14] and others. These papers, while they bear upon the problem of syntax in the manner just described, do not tackle this problem directly. To my knowledge there are no adequate direct efforts to dilineate the syntactical structures of the discipline of curriculum theory. As is probably typical of the early development of a discipline, there is a fair amount of comment in passing and a fair amount of borrowing from other disciplines. However the most common response to the syntax problem is to by-pass it by directing inquiry at those variables for which there <u>is</u> a suitable syntax. The result is the tendency, discussed in the preceeding section, to unduly focus attention on one set of problems to the exclusion of others. While it is not directly to the point, it is worth noting here a recent outstanding contribution to the syntax of inquiry pertaining to that particular set of problems. I refer to Travers' challenging comments on the required procedures for building an adequate theory of instruction.[15] Also worthy of note here is Faix's work on structural-functional analysis.[16] There are implications here, in need of clarification and amplification, for the beginnings of a syntax for curriculum theory. But an orderly and systematic statement of syntactical principles to guide the process of acquiring knowledge about the broader range of curriculum phenomena has yet to be accomplished.

Correlation of the Structures

A discipline, I have asserted following Schwab, typically manifests three types of structure, each giving rise to specific types of problems for the discipline which are related to but separate from the process of acquiring knowledge about the variables with which the discipline deals. Taken together, these three structures might be considered to constitute the metatheoretical structure of the discipline. Considering the matter in this way, attention is directed to the relatedness of each structure to the other two. If the three are to cohere into a unified metatheoretical structure, they must compliment rather than contradict or simply by-pass each other. That is to say, for example, that the syntactical structure employed must be appropriate for examination of the variables of interest to the substantive structures employed. Similarly, the organizational structure must define the boundaries of the field in a manner that is consistent with the realm of convenience assumed in the substantive structure employed. Such questions as the following need to be asked: what sort of syntax is appropriate to inquiry related to or built upon Heubner's identification of five modes of regarding curriculum events? Is Heubner's own syntax, which is drawn largely from philosophic discourse, the most appropriate way to continue with the work he has begun? Is there some point at which some sort of empirical methodology can be used to refine the models he suggests? Is it possible or desirable to try to identify specific behavioral variables related to each of the five modes? In what manner other than the sloppy traditional manner can insight achieved through the syntax of philosophical discourse be brought to bear upon the procedures of designing educational programs?

Similar problems may be raised with respect to the more firmly established substantive structures implicit in the Tyler rationale.[17] Particularly (but not exclusively) because of the confusion between prescription and description in Tyler's position it is difficult to know what sort of inquiry can be conducted in relation to it. And as one can see clearly in relation to Taba's[18] elaboration of the Tyler rationale, it is equally difficult to determine with clarity what the relation is between curriculum theory and a host of other disciplines including history, political science, sociology, social work, etc. Thus there is the need to work out relations between substative and organizational as well as substantive and syntactical structures. A thorough treatment of any particular metatheoretical background for curriculum theory would require the integration of all three structures.

Curriculum Theory

Thus far this paper has focused upon the metatheoretical foundation of curriculum theory. We turn now to the state of curriculum theory itself and to some suggestions for the further development of the field.

I believe it is well-known that there are no comprehensive theories about curriculum phenomena. But even such rudiments of theory as a limited set of explanatory propositions about selected curriculum phenomena, or disciplined efforts to suggest an approach to conceptualizing the events to which a theory might pertain, are quite limited in number. There are a few truly theoretical propositions buried here and there in works

designed for other purposes. Such propositions may be found for example, in Saylor and Alexander,[19] Inlow,[20] King and Brownell,[21] Beauchamp,[22] Goodland and Anderson,[23] and in various other curriculum texts.

Some of the work discussed above as contributing to the metatheoretical foundation of curriculum theory contains extensive descriptive apparatus coming as close to actual curriculum theory as anything written to date. Outstanding in this regard is Macdonald's systems analysis work.[24]

Beauchamp's text[25] has much to offer in the way of promising beginnings, especially with respect to his exploration of the problems involved in formulating a theory of curriculum. But his own attempt to formulate the foundations of a theory lapses into preaxeology.

In a shorter work, Mauritz Johnson has contributed to the small body of truly theoretical propositions about curriculum.[26] Johnson's paper is noteworthy for several things. First, he has carefully examined much of the supposedly theoretical literature to demonstrate how it fails to be actually theoretical (his analysis parallels mine in some respects). Second, he has approached the problem of defining "curriculum" and certain curriculum phenomena specifically from the point of view of theory-construction rather than from the more common point of view of curriculum trouble-shooting.[27] Third, he has produced a logically ordered model (schema is his word) of the various parts of curriculum. The model is general and descriptive, and thus potentially theoretical. A problem I see in his model is that it defines curriculum as the output of one system and the input into another system. It is not a system itself. It is an entity produced here and used there. Thus construed, it could not itself be theorized about. Rather its bounding systems would be the object of theory. Whether such theory would be curriculum theory is a possibly troublesome question.

Another noteworthy paper is Frymier's detailed discussion of elements and operations constituting the domain of curriculum.[28] His approach is theoretical rather then preaxeological, and with further development could constitute a major contribution.

Somewhat on the periphery of curriculum theory but none-the-less worth mentioning is a growing literature on the process of curriculum innovation. Some of these, like Taba's[29] are merely persuasive reports of comparitively successful techniques employed to bring about particular changes in particular schools. Other papers, especially those by Bhola,[30] and Guba,[31] while directed in part towards the solution of the particular problem of "speeding up innovation," still contain some useful theoretical propositions describing curriculum processes.

In considering the scarcity of actual curriculum theory, Johnson remarks that "the majority of educationists, educational practitioners, and scholars active in curriculum reform are oriented toward improvement rather than understanding."[32] While one might sympathize with the practitioner's need for solutions to particular problems, this sympathy should not lead the scholar into a misunderstanding of the nature and function of theory. Theory is explanatory, and explanation leads in many cases to control, or at least to prediction. In the long run theory

coupled with value commitment leads to a position about practice. But as Travers has pointed out, inquiry aimed at determining methods for maximizing a given effect is not likely to succeed very well in the absence of sound prior theory, and is not likely to be an efficient approach to the development of theory.[33] Conversely, inquiry designed in accordance with the requirements for the development of sound theory is not likely, in the short run, to yield answers to the practitioner's questions. Never-the-less the practitioner, whose impatience with "pure theory" sometimes borders on blatant anti-intellectualism, should not overlook the likelihood that many of his most pressing difficulties are precisely the result of a short-sighted patch-work approach to past problems--an approach which, in the absence of sound general theory, tends to view as separate and isolated problems certain phenomena which in fact are intrinsic correlated characteristics of an entire system of phenomena. To use again an analogy I have used elsewhere,[34] the approach is not unlike that of a doctor who in prescribing a pill for a kidney ailment fails to determine whether the pill might destroy the liver while it cures the kidney. If the nature of theory and its relation to practice were better understood, the practitioner might regard the theorist with less suspicion, and the scholar who would be a theorist would perhaps feel less compelled to direct his "theorizing" toward the development of a "position." Thus, for example, in the absence of the compulsion to produce a "useful" document the insight which initiated the "taxonomies" project[35] might instead have initiated a substantial contribution to curriculum theory.

There are a number of valid points of view as to how to proceed with curriculum theory construction. I think it would be generally conceeded, however, that there are two aspects to the job--systematic speculation and systematic data gathering. One would agree with Travers that adequate theory cannot be "data-free." But one must also recognize that data-collection which is not guided by shrewd systematic speculation about relations among phenomena is likely to result in dispersed rather than cohesive data. I would suggest that it may be fruitful to observe the following points in efforts to build curriculum theory. First, assumptions about syntactical, organizational, and substantive structures should be made explicit to whatever extent possible. Second, problems should be identified in relation to these structures rather that in relation to "practical" problems of schooling. Organizational structures will suggest boundaries to the phenomena to be studied. Syntactical structures rather than methodologies borrowed wholesale from other disciplines will suggest the approach to achieving warranted assertability. An substantive structures will generate models of interesting relationships among phenomena. It is at this stage, the generation of models, that speculation is appropriate. If one wanted to study team-teaching, for example, it would be well first to consider from an organizational point of view whether this phenomenon is to be defined as an outcome variable of a curriculum process, an input variable in an instructional system, or as something else altogether. Then it would be appropriate to examine what sorts of evidence are appropriate for the study of the variable thus construed. Clearly the appropriate evidence to study team-teaching as the product of a system of social inter-actions is not the same as the appropriate evidence to study team teaching as a variable affecting achievement in a given subject. Finally, one's assumption about substantive structures will suggest patterns of relatedness among the phenomena, including team teaching, selected for study. Appropriate speculation would then be speculation as to the precise nature of these patterns of relatedness. To be productive,

such speculation must take cognizance of the problems involved in refinement and validation. This does not mean that one should speculate only about phenomena for which methods of measurement and analysis already exist. It does mean that the speculations should be so caste that the problems of ultimate measurement and analysis are as simple as the intrinsic complexity of the conceptions will allow. Thus, for example, a good conception should not be sacrificed or reduced in importance for lack of immediately available operational definitions of variables. But the language used should be as precise as possible and as close to operationality as possible at the time without such sacrifice. Speculation should not be an excuse for sloppiness, but the need ultimately to measure should not be an excuse for avoiding exploration of some of the more complex components of educational experience.

If the gathering of data is intended to further the development of theory rather than to generate solutions to specific problems, the data must be interpreted accordingly. The main thrust of interpretation should be not towards application to school problems but towards refinement of models. The conclusion drawn from a study of team-teaching should not be of the order of recommendations for practice but of the order of correcting speculations about the relations between team teaching and other variables of interest. In this context Travers' comments about the ultimate futility of "maximization" studies in the absence of sound prior theory is well-taken. As observed above, curriculum studies often fail to contribute to theory because they are designed to produce prescriptions for maximizing certain allegedly desirable effects instead of being designed to produce understanding of relations among phenomena.

If this general approach to building curriculum theory were taken, the discipline would have a beginning. It is not clear how far this beginning would go, however. It seems likely to me, but by no means certain, that there exists a system of phenomena which it would be the unique business of curriculum theory to explain. Determination of this possibility can only occur on the basis of assuming it to be so and proceeding from there to test the assumption. One might discover that the "realm of convenience" of curriculum theory is composed of sets of phenomena most conveniently explained by further work in other disciplines. This seems to be the reasoning behind the current tendency toward hybred disciplines such as "the sociology of education," the "politics of education," etc. My tentative conviction, however, is that there are interesting phenomena which are most conveniently construed as curriculum phenomena and which therefore can most conveniently be explained by curriculum theory. My conclusion is that there is not yet much in the way of curriculum theory, but that there can be and that in the interest of acquiring knowledge of certain phenomena within the general field of education there ought to be.

Summary

Schwab's analysis of the structures characteristic of any discipline seem useful in classifying and revealing relations among various efforts to lay the foundations for a discipline of curriculum theory. Further work on each of the three kinds of structures he identifies is needed, as is work on the problem of bringing together propositions about each type of structure into something approaching coherent metatheories for curriculum theory. This sort of work is essentially analytic, and like most analytic

work requires a broad understanding of the phenomena involved, and a strong and disciplined imagination.

With respect to curriculum theory itself--that is, highly general explanatory statements about relations among curriculum phenomena--there seems to be very little material. Most of what bears the name of curriculum theory is not theoretical at all but is more properly considered preaxeological. Good preaxeology of curriculum is extremely useful and important, but it is not the same thing as theory and doesn't accomplish what theory accomplishes. It enables people who cannot wait forever to make critical decisions in a reasonable manner. In the long run, however, theory rather than preaxeology will produce understanding, and understanding, in addition to being intrinsically valuable, will probably result in decisions that better serve the interests of educational institutions. While there is no kind of inquiry this author would have the temerity to declare wrong (except for incompetent inquiry of any kind), it is important to note that inquiry which is intended to serve theory-building rather than some other endeavor needs to be designed specifically for the purpose. This is as true for the "design" of speculation as it is for the design of data gathering, analysis, and interpretation.

It seems likely, but not certain, that there is a set of phenomena most conveniently explained through a discipline of curriculum theory. In a sense this paper seeks to predict the discovery of such a set of phenomena in a manner vaguely similar to the way in which the periodic table predicted the discovery of the elements. The analogy has obviously limited validity. But my conviction is served by it--that if we direct our attention to the right place in the right way some worthwhile discoveries will be made.

FOOTNOTES

[1]Joseph Schwab, "Problems, Topics, and Issues," in Stanley Elam, ed., Education and the Structure of Knowledge (Chicago: Rand McNally, 1964).

[2]See for example: R. M. Jones, An Application of Psychoanalysis to Education (Springfield, Ill.: Charles C. Thomas, 1962).

[3]Jerome S. Bruner, The Process of Education (Cambridge, Mass.: Harvard University Press, 1960).

[4]Philip H. Phenix, Realms of Meaning (New York: McGraw-Hill, 1964).

[5]James Bradley Macdonald, "Researching Curriculum Output: the use of a General Systems Theory to Identify Appropriate Curriculum Outputs and Research Hypotheses," Paper presented at AERA meeting, February 1965. See other papers by Macdonald and especially his forthcoming book.

[6]Ralph Tyler, Basic Principles of Curriculum and Instruction, Syllabus Division (Chicago: University of Chicago Press, 1950).

[7]Elliot Eisner, "Educational Objectives: Help or Hindrance?" The School Review, Vol. LXXV, No. 3, autumn, 1967.

[8]John S. Mann, "The Time-Premise in Two Approaches to Curriculum," Spring, 1967. (Mimeographed.)

[9]Alexander Frazier, ed., New Insights and the Curriculum, ASCD, Washington, 1963.

[10]Macdonald and Leeper, eds., Language and Meaning, ASCD, Washington, 1966.

[11]Jack R. Frymier, "In Quest of Curriculum Theory" to be published in Theory into Practice. (Mimeographed.)

[12]Thomas L. Faix, Structural-Functional Analysis as a Conceptual System for Curriculum Theory and Research: A Theoretical Study (unpublished Ph.D. thesis, University of Wisconsin, 1964).

[13]Mauritz Johnson, Jr., Definitions and Models in Curriculum Theory, April, 1966. (Mimeographed.)

[14]Paul Komisar and James Mclellen, "Content Analysis of Curriculum Theory," Mimeographed; and "The Logic of Slogans," in B. Othanel Smith, and Robert H. Ennis, eds., Language and Concepts in Education, (Chicago: Rand McNally, 1961).

[15]Robert M. W. Travers, "Towards Taking the Fun out of Building a Theory of Instruction," Teachers College Record, LXVIII (October, 1966).

[16]Faix, see note #12.

[17]Tyler, see note #6.

[18]Hilda Taba, Curriculum Development: Theory and Practice (New York: Harcourt, Brace and World, Inc., 1962).

[19]J. Galen Saylor and William M. Alexander, Curriculum Planning for Modern Schools (New York: Holt, Rinehart and Winston, 1966).

[20]Gail Inlow, The Emergent in Curriculum (New York: John Wiley and Sons, Inc., 1966).

[21]Arthur R. King, Jr. and John A. Brownell, The Curriculum and the Discipline of Knowledge (New York: John Wiley and Sons, Inc., 1966).

[22]George A. Beauchamp, The Curriculum of the Elementary School (Boston: Allyn and Bacon, Inc., 1966).

[23]John I. Goodlad and Robert H. Anderson, The Non-graded Elementary School (New York: Harcourt, Brace and World, Inc., 1963).

[24]Macdonald, see note #5.

[25]George A. Beauchamp, Curriculum Theory (New York: Kagg Press, 1961).

[26]Johnson, see note #13.

[27]See my discussion below, p. 10 for clarification of the importance of this point.

[28]Frymier, see note #11.

[29]Hilda Taba, "One Model for Disseminating Curricular Innovations: Problems, Processes, and Possibilities" San Francisco State College, February, 1967. (Mimeographed.)

[30]Harbans Singh Bhola, "The Configurational Theory of Innovation Diffusion," School of Education, Ohio State University, October, 1965. (Mimeographed.)

[31]Egon G. Guba, "Methodological Strategies for Educational Change," A paper presented to the conference on strategies for educational change, Washington, November, 1965. (Mimeographed.)

[32]Johnson, see note #13.

[33]Travers, see note #15.

[34]John S. Mann, "Functions of Curriculum Research," Educational Leadership, 24:1, October, 1966.

[35]Benjamin S. Bloom, ed., Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook I: Cognitive Domain; and David R. Krathwohl, et.al., Handbook II: Affective Domain (New York: David McKay Company, Inc., 1956 and 1964).

Both scholarly and professional interests would be served, I believe, by careful self-conscious attention on the part of curriculum theorists to the problem of the relations between their particular work and the work of other theorists, and between their work and the immanent discipline of curriculum theory. I say immanent because I believe that there is not yet a discipline of curriculum theory, but that most of the ingredients for one are present in solution, ready to be precipitated out under an appropriate catalyst. I would like this paper to suggest the form such a catalyst might take. It aims to do so by superimposing a structure upon diverse efforts in the field, thereby illuminating a set of possible relations among such efforts. The structure employed is borrowed from Joseph Schwab's well-known discussion of the basic structures of disciplines in general.[1]

Schwab contends that all disciplines manifest three kinds of structure. He calls these three kinds of structure "organizational," "substantive," and "syntactical".

Organizational Structure

In general the organizational structures of a discipline are the principles of its relation to other disciplines, or, looked at from a slightly different perspective, its position in a taxonomy of the disciplines which constitute man's organized knowledge. Of the several difficult problems related to the ordering of disciplines, the one that concerns us most directly here is the problem of defining borders and interactions between curriculum theory and other disciplines. Misunderstanding of borders and interactions impedes the orderly growth of a discipline as well as the legitimate incorporation into that discipline of insights from another. Let us consider an example. Freud's discovery that repression is instrumental in the formation of neuroses is obviously of interest to educators. But though a school and a psychiatrist may share an interest in mental health it does not necessarily follow that a school should seek ways to incorporate psychiatric techniques, such as those used by the psychiatrist for digging up repressed material, into its regular curriculum. The relationship between psychiatry and schooling is complex, and proper use in the schools of the findings of psychiatry requires careful analysis of these complexities. In general those people who have advocated the use of psychiatric knowledge in curriculum building have not made such analyses.[2] The same might be said of those who have advocated a sociological or economic solution to the problem of racial segregation in education. Any serious attention to the relationship between education and the economics and sociology of racial prejudice would have revealed that the educational problem begins rather than ends with the physical presence of previously excluded ethnic groups.

Another example of an organizational problem has to do with the current wave of interest in the "structure of the disciplines." The problem of elucidating the structure of a discipline such as mathematics is not in itself an organizational problem for curriculum theory. The problem of elucidating the relation between such a structure and the practice of curriculum is a problem for curriculum theory. As in the above examples the tendency has been to assume too simple a relationship, namely, that the discovery of the structure of mathematics in itself provides a solution to the problem of organizing the mathematics curriculum. While this may be the case, the analyses necessary to demonstrate that conclusion have not been undertaken by the advocates of the "structure of the disciplines" movement in curriculum. Bruner,[3] Phenix,[4] and a few other scholars have suggested possible approaches to such analysis, but no one has done the job thoroughly.